



DUKE POWER

June 14, 1991

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Subject: McGuire Nuclear Station Unit 1
Docket No. 50-369
Licensee Event Report 369/91-05

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report 369/91-05 concerning both trains of Annulus Ventilation being inoperable. This report is being submitted in accordance with 10 CFR 50.73(a)(2)(v), (a)(2)(i) and (a)(2)(vii). This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

Tony L. McConnell

T. L. McConnell

ADJ/cbl

Attachment

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LICENSEE EVENT REPORT (LER)

FACILITY NAME McGuire Nuclear Station, Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 3 6 9										PAGE (3) 1 OF 8															
TITLE (4) Both Trains Of The Annulus Ventilation System Were Inoperable Due To An Inappropriate Action Caused By Management Deficiencies and Deficient Communication																																			
EVENT DATE (5)						LER NUMBER (6)						REPORT DATE (7)						OTHER FACILITIES INVOLVED (8)																	
MONTH		DAY		YEAR		YEAR		SEQUENTIAL NUMBER		REVISION NUMBER		MONTH		DAY		YEAR		FACILITY NAMES N/A																	
0 5		15		9 1		9 1		1 - 0 0 5		- 0 0		0 6		1 4		9 1		DOCKET NUMBER (5) 0 5 0 0 0 0																	
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)																																			
OPERATING MODE (9)		1		20.402(b)										20.406(c)										50.73(a)(2)(iv)										73.71(b)	
POWER LEVEL (10)		0 3 0		20.405(a)(1)(ii)										50.38(c)(1)										X 50.73(a)(2)(iv)										73.71(c)	
				20.405(a)(1)(iii)										50.38(c)(2)										X 50.73(a)(2)(iv)										OTHER (Specify in Abstract Below and in Text NRC Form 366A)	
				20.405(a)(1)(iii)										50.73(a)(2)(ii)										50.73(a)(2)(iv)(A)											
				20.405(a)(1)(iv)										50.73(a)(2)(ii)										50.73(a)(2)(iv)(B)											
				20.405(a)(1)(iv)										50.73(a)(2)(ii)										50.73(a)(2)(iv)											
LICENSEE CONTACT FOR THIS LER (12)																																			
NAME Alan Sipe, Chairman, McGuire Safety Review Group																TELEPHONE NUMBER 7 0 4 8 7 5 - 4 1 8 3																			
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																			
CAUSE		SYSTEM		COMPONENT		MANUFACTURER		REPORTABLE TO NRC		CAUSE		SYSTEM		COMPONENT		MANUFACTURER		REPORTABLE TO NRC																	
SUPPLEMENTAL REPORT EXPECTED (14)																EXPECTED SUBMISSION DATE (15)		MONTH		DAY		YEAR													
YES (If yes, complete EXPECTED SUBMISSION DATE)																X NO																			

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On May 15, 1991, at 1130, Integrated Scheduling personnel were informed by Security personnel that both Unit 1 lower Annulus doors were open. The Integrated Scheduling person then checked with Operations (OPS) personnel to determine if they were aware of the doors being open. Consequently, since it could not be immediately verified whether the doors were still held open or not, OPS personnel entered Technical Specification (TS) Action Statement 3.0.3 for Unit 1 due to both trains of the Annulus Ventilation (VE) system being inoperable. Upon investigation by OPS personnel, it was found that the doors had been held open for painting of the doors and door frames on May 14, 1991, from 1500 to 1630, and on May 15, 1991, from 0800 to 0930 and 1020 to 1140. OPS personnel had not been aware that the doors were held open during these times and appropriate compensatory actions had not been established. Therefore, both trains of the VE system were technically inoperable during the times when the doors were held open. The doors were verified to be closed and OPS personnel exited TS Action Statement 3.0.3 for Unit 1. Unit 1 was in Mode 1 (Power Operation) at 30 percent power at the time of the event discovery. This incident is assigned causes of Management Deficiency resulting from inadequate work control and management interface, and Inappropriate Action. Appropriate guidelines for control of painting station equipment will be re-emphasized to prevent recurrence of similar events.

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APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/86

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EVALUATION:

Background

The VE system [EIIS:VD] is designed to produce and maintain a negative pressure in the Annulus following a Loss of Coolant Accident (LOCA), to minimize the release of radioactive material following a LOCA, and to provide long term fission product removal. TS 3.6.1.8 specifies that two independent VE system trains be operable in Modes 1, 2 (Startup), 3 (Hot Standby), and 4 (Hot Shutdown).

The negative pressure is accomplished by the Annulus Ventilation Fan [EIIS:FAN] discharging through filters [EIIS:FLT] to the Unit Vent [EIIS:VL], where the release is monitored. This continues until a negative pressure of 4.2 inches water gage (W.G.) is reached. Then the VE system goes into a recirculation mode until the negative pressure reaches 1.2 inches W.G. At that setpoint, the fan again discharges to the Unit Vent and the cycle continues. TS 4.6.1.8d.4 requires that a minimum negative differential pressure of greater than or equal to 1.2 inches W.G. shall be maintained between inside the Annulus and outside the Reactor Building during surveillance testing.

Description of Event

In April of 1991, a problem with the door stops on the Unit 1 Annulus doors [EIIS:DR] was addressed by Project Services personnel. Consequently, on April 12, 1991, McGuire Variation Notice MPVN-1480 was written to modify the door stops to alleviate the problem. On that same date, work requests were initiated by Project Services personnel to perform the modification.

When the work requests were planned on April 16, 1991, the Project Services person in charge of the project did talk with the Planning (PLN) person who planned the jobs, but no mention was made of keeping the doors closed during the work since the decision to do so came later. A note was included on the work requests stating "Contact the Project Services person in charge of the modification before starting work".

On April 29, 1991, a meeting was held by Project Services personnel to discuss the proposed welding for the door stops on Unit 1. Representatives were present from the OPS, Performance (PRF), Maintenance (MNT), Radiation Protection (RP), and Design Engineering (DE) groups. From this meeting came the following alternatives for ways to perform the welding:

- 1) Change the design to move the stops to the outside of the doors.
- 2) Hold the doors open during the performance of the work and establish communications between OPS and MNT personnel in such a way that the doors could be closed and sealed at any time as necessary.

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- 3) Keep the doors closed during the performance of the work by using a 110 volt welding machine which could be taken behind the doors.

After consideration of these options, a decision was made to use the third option and keep the doors closed during performance of the work. During the meeting and subsequent decision, no interface was made with either PLN or MNT Paint Craft personnel concerning performance of the modification.

On May 13, 1991, the work requests were scheduled for the modifications to be performed. The MNT Welding Craft personnel performing the welding tasks contacted the Project Services person responsible for the modification prior to their portion of the work. The Projects Services person went with the MNT Welding Craft personnel to show them what to do on the first two doors. All welding was performed without incident.

Upon receipt of word that the welding was completed, the Project Services person contacted PLN personnel responsible for scheduling the painting portion of the tasks. He informed the PLN personnel that they needed to stress to the MNT Paint Craft personnel that the doors must not be left open.

The PLN person responsible for scheduling the work then called the MNT Paint Craft person acting as supervisor for the paint crew and instructed him that the doors could not be left open.

The work requests were then scheduled for the painting to be performed on May 14, 1991. At 0930, on May 14, the job was assigned to appropriate MNT Paint Craft personnel. The MNT personnel gathered appropriate procedures and went to the Control Room [E11S:NA] to obtain permission to begin work from OPS personnel. The OPS person contacted stated that work already in progress would prohibit painting the doors because of traffic through the doors and instructed the MNT personnel to check back later to see if the work could then be performed.

At 1315, the MNT Paint Craft person acting as supervisor for the Paint Crew contacted the Project Services person responsible for the tasks about the difficulty in performing the painting on the doors. He stated that the task should perhaps be rescheduled when the Unit was in an outage. The Project Services person instructed him to continue with the task and discussed in detail the proper way to perform the job stressing the need to close the doors behind them.

The MNT Paint Craft person acting as supervisor did not perceive this as not to hold the doors open during performance of the painting but as a reminder to close the doors after painting them. Therefore, he did not relay the instruction to the personnel performing the task.

At 1358, the MNT Paint Craft personnel again contacted OPS Control Room personnel for permission to begin work. The OPS Control Room person involved questioned the MNT personnel about the job and inquired if they had made the proper notification to PRF personnel since they would be spray painting in

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the Auxiliary Building [EHS:NF]. They informed him that the appropriate notification had been made. He then gave them permission to begin work. During this conversation, there was a misunderstanding as to whether the doors would be held open to perform the work. No compensatory measures were implemented.

The MNT Paint Craft personnel then obtained permission to begin the task from RP personnel, obtained appropriate material to perform the task, and arrived at the doors at 1500. They contacted the Security person at the doors and informed him that they would be entering the doors. They then proceeded to paint the doors, holding them open while they painted the doors and frames. At 1630, they completed work for the day, closed and locked the doors.

On May 15, 1991, at 0800, they again contacted RP personnel. They then proceeded to the doors and painted as before, holding the doors open, until approximately 0930. They then closed the doors and left until 1020. They then returned and painted in the same manner until 1140.

At 1130, the Security person on duty in the area asked them if they had fire tags for the doors since they were holding them open. When they replied that they did not, the Security person called the Integrated Scheduling personnel to inquire about the doors being open. The Integrating Scheduling person then checked with OPS Control Room personnel about the doors being open. The OPS personnel realized that if the doors were being held open and that no compensatory measures were in effect, then both trains of the VE system were inoperable. OPS personnel immediately entered TS Action Statement 3.0.3 for Unit 1 and investigated to determine whether the doors were closed. The doors were verified to be closed at that time and OPS personnel exited TS Action Statement 3.0.3 for Unit 1. At 1252, appropriate notification was made to the NRC of the Unit entering TS 3.0.3 because the doors had been held open.

Conclusion

This event has been assigned causes of Management Deficiency resulting from inadequate work control and management interface.

MPVN-1480 was initiated to implement corrective actions to resolve a problem with the door stops breaking off of the Annulus doors. The work organization/planning specific to the work requests for implementing the modification did not identify the special circumstances commensurate with working on the doors. Nowhere on the work requests was any statement of the requirement to keep the doors closed during the performance of the work. When questioned, the PLN person who planned the jobs stated that he had talked with the Project Services person in charge of the modification prior to planning the tasks but during this conversation, there was no mention of the paint portion of the work or of the requirement to keep the doors closed.

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He stated that he only looked at the doors for the location of the welding of the new stops and made a step on the work requests about touching up the paint because it was "standard" practice.

At a later date, the Project Services person in charge of the modification held a meeting to discuss how the welding portion of the modification could best be performed. No representative from the PLN group or the MNT Paint Craft crew was present and the painting portion of the job was not discussed.

Also, when questioned, the PLN person who planned the work stated that he did not interface with MNT Paint Craft personnel when planning the job sequence for touching up the paint. His understanding of the job scope when planning this portion of the job was that the operability of the doors was the point of concern. He was not aware that the operability of the VE system could be affected by the work since he expected the MNT Paint Craft personnel to only touch up the paint. Had he been aware that the doors were to be held open, a note would have been added to the work request stating the requirement for compensatory actions. He also stated that he had no list of people or direction as to who should be designated on the work requests as a contact with expert knowledge of the specific equipment involved. In this case, since the Project Services person in charge of the modification was already listed on the work request as a contact, he considered that person adequate.

Causes of Inappropriate Action have also been assigned because of deficient communication by the MNT Paint Craft person acting as crew supervisor and unauthorized actions by the MNT Paint Craft personnel performing the work.

Prior to the work requests being scheduled to the paint crew, the Project Services person contacted the PLN person responsible for scheduling that portion of the work. He explained that the doors had to be kept closed during performance of the work and instructed the PLN person to inform the Paint Crew personnel involved of these instructions. The PLN person then contacted the MNT Paint Craft person acting as supervisor for the paint crew and informed him that "the doors could not be left open". The MNT Paint Craft person did not perceive this as meaning that the doors could not be held open during work. His understanding was that they must insure that the doors were closed after the work was performed. After the work requests were received by the MNT Paint Crew, the MNT Paint Craft person acting as supervisor did not relay these instructions to the Paint Crew personnel who were to perform the task because he stated "they already knew to close the doors behind them." Also, the Paint Craft personnel were of the "mindset" that touch-up paint meant to paint the entire door surface to do a good job. This was a preconceived idea present because of past job experience. Therefore, when they made a decision to paint the whole door and frame, the contact person was not consulted.

The MNT Paint Craft person acting as crew supervisor approached the Project Services person in charge of the modification just prior to beginning of the work to ask if the jobs needed to wait until an outage. The Project Services person again gave him instructions to close the doors behind them while

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working. The MNT Paint Craft person still misinterpreted these directions and did not feel it important to relay them to the personnel performing the work since "they already knew to close the doors."

When the Paint Craft personnel involved obtained permission to begin work from OPS, the OPS person involved did not understand that the doors would be held open. Therefore, no compensatory actions were taken when the doors were held open and the MNT Paint Craft personnel performed an Inappropriate Action when holding the doors open.

A review of the Operating Experience Program Data Base for the past twenty-four months prior to this event revealed one recurring event involving a Management Deficiency resulting from deficient communication. This event was documented on Licensee Event Report (LER) No. 369/90-17. This LER involved both emergency Diesel Generators [EIGS:DG] being inoperable due to equipment failure caused by paint binding the fuel rack pivot points. Specific corrective actions for that event should have prevented this event from occurring. However, the corrective actions for control of paint activities were misinterpreted by PLN Management personnel involved and not fully implemented. Contact persons with expert knowledge of the specific equipment have not been designated on all work requests requiring painting of safety-related components. Also, PLN personnel involved in planning of paint tasks were unclear as to the extent of pre-job planning interface necessary with MNT Paint Craft personnel. The changes which were made to the McGuire Maintenance Management Manual were general and did not provide specific guidance. As a result, this event is recurring and the previous corrective actions will be reemphasized and used fully to prevent recurrence of similar events. In addition, VE system breach problems caused by inadequate work control are considered recurring.

This event is not reportable to the Nuclear Plant Reliability Data System (NPRDS).

There were no personnel injuries, radiation overexposures, or radioactive releases as a result of this event.

CORRECTIVE ACTIONS:

- Immediate: 1) OPS personnel verified that all Annulus doors were closed.
- Subsequent: 1) PLN Management personnel reemphasized requirements for planning work requests requiring painting of equipment to appropriate PLN personnel.
- 2) A meeting was held between MNT Paint Craft personnel, PLN personnel, and MNT Management Personnel involved to discuss the circumstances surrounding the event and planned corrective actions in an effort to resolve

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problems with control of paint activities and prevent recurrence of similar events.

- 3) MNT Management personnel reemphasized to all personnel involved that a contact person or group with expert knowledge of the specific equipment involved will be designated on all work requests requiring painting activities.
- 4) MNT Management personnel emphasized to PLN personnel that appropriate pre-job interface should be performed to ensure necessary precautions are included on all work requests requiring painting activities.
- 5) MNT Management personnel designated MNT personnel to review all work requests pertaining to coatings prior to the work request being scheduled to the craft work crew.

Planned:

- 1) This event will be covered with all appropriate OPS, MNT, and PLN personnel.
- 2) The McGuire Maintenance Management Manual will be reviewed and appropriate changes made to the specified process to control paint tasks if necessary.
- 3) MNT Management personnel will provide a list of appropriate group contacts with expert knowledge of equipment involved to PLN personnel for use on work requests involving paint activities.

SAFETY ANALYSIS:

The VE system is an accident mitigation system. The VE system is only required to function following a LOCA and is actuated by a Containment Hi-Hi pressure signal of 3 psig. The purpose of the VE system is to create and maintain a negative pressure zone in the Annulus to minimize the release of radioactive material, and to provide long term fission product removal. With an Annulus door open, the VE system would be able to function but the negative pressure required would be degraded. Assuming LOCA conditions with an Annulus door open, the Design Engineering dose assessment produced values exceeded the NRC dose guidelines. NRC dose guidelines are calculated based on instantaneous release of fission products following a LOCA. The assumption is extremely conservative. The VE system would not be able to maintain the negative pressure zone. At this point, radioactivity could leak into the Auxiliary Building. However, the Auxiliary Building Ventilation (VA) system [EIIIS:VF] should be able to handle this inleakage. This system consists of two redundant trains and automatically switches to the filtered exhaust mode of operation on a Blackout or LOCA, or if radiation is detected by the exhaust radiation monitor. When the VA system switches to the filtered exhaust mode, the supply units and unfiltered exhaust units are

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secured. Operation of the filtered exhaust units without the benefit of the supply units allows a negative pressure to be pulled on the Auxiliary Building, thereby, facilitating the removal of radioactivity from the Annulus.

The VE system was not challenged nor required to perform the safety function required under accident conditions during performance of any of the activities associated with this event.

For most accident sequences, there is significant time between when OPS Control Room personnel would be aware that they had a situation which would lead to core damage, and the time that large fission product release would actually occur. The source term used for the offsite dose calculations is currently recognized to contain conservatism with respect to both timing and composition of radioactive releases following a design basis accident. For the highest frequency core damage sequences, one to two hours would be available for OPS Control Room personnel to diagnose the situation and take the appropriate actions required by the emergency procedures. Some very unlikely accident sequences exist, however, that could result in core damage in a 30 minute time period. This still reflects significant margin to the expected 15 minute reaction time provided by the steps included in the emergency procedures. If an event involving a LOCA had occurred during the time when the doors were held open, the MNT personnel involved could have quickly closed the doors and restored Annulus integrity well within allowable time limits.

The health and safety of the public were not affected by this event.